

Amendments to the claims:

This listing of claims replaces all prior version and listings of claims in the application:

Listing of claims:

1. (Currently amended) A Crystalline GDP-fucose synthetase (GFS) [[GFS]].
2. (Currently amended) The crystalline GFS of claim 1, wherein said GFS is *E. coli* GFS.
3. (Currently amended) The crystalline GFS of claim 1, wherein said GFS is recombinant GFS.
4. (Currently amended) The crystalline GFS of claim 1, wherein said GFS is crystallized with a co-factor selected from the group consisting of NADPH and NADP+.
5. (Currently amended) The crystalline GFS of claim 1, wherein said GFS comprises the mature sequence of naturally-occurring GFS.
6. (Currently amended) A crystalline ~~complex of composition comprising GFS is associating~~ GDP-fucose synthetase (GFS) complexed with a second chemical species.
7. (Currently amended) The composition of claim 6, wherein said second chemical species is selected from the group consisting of NADPH, NADP+, and a potential inhibitor of GFS activity.
- 8-29. (Cancelled)
30. (New) The crystalline GFS of claim 1, which comprises the amino acid sequence of SEQ ID NO: 2.

31. (New) The crystalline GFS of claim 1, characterized as having space group $P3_221$ or $P3_121$.

32. (New) The crystalline GFS of claim 31, wherein the crystal has unit cell parameters of $a=104.2 \text{ \AA}$ and $c=74.9 \text{ \AA}$.

33. (New) The crystalline GFS of claim 1, wherein the crystal has diffraction data according to Table 1.

34. (New) The crystalline GFS of claim 1, wherein the crystal diffracts at a resolution of at least 2.2 \AA resolution.

35. (New) The crystalline GFS of claim 1, wherein the crystal comprises an active site that comprises amino acids Arg12, Met14, Val15, Arg36, Asn40, Leu41, Ala63, Ile86, Gly106, Ser107, Ser108, Cys109, Tyr136, Lys140, Asn165, Leu166, His179, Val180, Leu184, Val201, Trp202, Arg209, and Lys283.

36. (New) The crystalline GFS of claim 35, wherein the active site has a substitution at Arg36 with Phe40.

37. (New) The crystalline GFS of claim 1, wherein the active site comprises amino acids Ser107, Tyr136, and Lys140.

38. (New) The crystalline GFS of claim 1, wherein the distance between Lys140 and Tyr136 is at least 4.1 \AA .

39. (New) The crystalline complex of claim 7, wherein the GFS is complexed with NADP^+ .

40. (New) The crystalline complex of claim 39, wherein the complex has unit cell parameters of $a=104.2 \text{ \AA}$ and $c=75.1 \text{ \AA}$.

41. (New) The complex of claim 39, wherein the complex has diffraction data according to Table 2.
42. (New) The crystalline complex of claim 7, wherein the GFS is complexed with NADPH.
43. (New) The crystalline complex of claim 42, wherein the complex has unit cell parameters of $a=104.3 \text{ \AA}$ and $c=74.9 \text{ \AA}$.
44. (New) The crystalline GFS of claim 1, wherein the crystal diffracts according to the structural coordinates as deposited in Protein Databank entry code 1GFS.
45. (New) The crystalline complex of claim 7, wherein the crystal complex diffracts according to the structural coordinates as deposited in Protein Databank entry code 1FXS or 1BSV.